ABSTRACT OF THE DISCLOSURE

A network switch architected using multiple processor engines includes a method and system for ensuring temporal consistency of data and resources as packet traffic flows through the switch. Upon receiving a connection request, the switch internally associates a semaphore with the connection. The semaphore is distributed and stored at the processing engines. Each of the processing engines performs specific operations relating to incoming packets associated with the connection. Internal messages are passed between the processing engines to coordinate and control these operations. Some of these messages can include a semaphore value. Upon receiving such a message, a processing engine compares the semaphore value to a stored semaphore. Packets relating to the connection identified by the message are processed if there is a match between the semaphores. Also, the semaphore value can be moved from one processing engine to another in order to control the allocation and de-allocation of resources.